THE FY 2001 IMPLEMENTATION PLAN FOR NWS TRAINING AND EDUCATION

I. OVERVIEW

The purpose of this document is to specify training and education activities for all National Weather Service (NWS) staff in fiscal year (FY) 2001 and to outline high priority training needs to be addressed for implementation in FY 2002 and beyond. The requirement for the FY 2001 Implementation Plan for NWS Training and Education (IP01) is specified by the NWS National Strategic Training and Education Plan (NSTEP).

As per NSTEP, the process of determining and prioritizing training requirements within available budgets was coordinated by the NSTEP Field Requirements Group (FRG). The FRG representatives for the IP01 process included the Regional Scientific Services Division Chiefs or Regional Scientists, and the National Centers for Environmental Prediction's (NCEP) Executive Officer. This document provides the requirements for the NSTEP Heads of Training Group (HOTG) to develop and/or offer the instructional components indicated herein during FY 2001. The coordination of the entire NSTEP process, including development of this plan, was facilitated by the NSTEP National Headquarters Group (NHG).

During FY 2000, a final series of Professional Development Series (PDS) meetings to fully define training needs across all areas of NWS field responsibility in specific job duty areas were completed. Based on these needs, members of the NSTEP Team and other experts participated in conference calls on a weekly basis during spring 2000 to specify NWS training to be accomplished in FY 2001. Direct regional participation in the IP01 process continued to closely involve all regional division chiefs and their staffs, and commenced earlier than was the case for the FY 2000 process. Tables 1 and 2 show the final in-residence classes and FY 2001 training expenditures respectively as determined by the FRG process, which will be implemented and tracked in FY 2001.

As a guide to the remainder of this document, a summary of definitions and terms used in conjunction with the PDS process is provided in Section II. A detailed summary of training plans for FY 2001 is provided in Section III. These plans include PDS-related residence courses and distance-learning development, in addition to non-PDS programmatic training activities for which funds have been identified. A prioritized list of unfunded training requirements which exist due to budget limitations is found in Section IV. Finally, Section V describes anticipated training needs in FY 2002 and beyond.

Table 1 contains a summary of all in-residence classes to be offered in FY 2001. This summary provides details related to class size and length, funding source, slot allocation by FRG member, and itemized costs, (including contract costs for all classes). Each class listed in Table 1 is also included in Table 2, stratified by PDS. It is noted while some activities could easily have been placed into two or more PDSs, each activity is listed only once and has been placed in the PDS deemed most appropriate by the NSTEP Team.

Table 3 contains an integrated workload analysis of HOTG resources, also stratified by PDS. For some NWS/Cooperative Program for Operational Meteorology, Education, and Training (COMET) employees, funding is provided from non-National Oceanic and Atmospheric Administration (NOAA) sources, which explains a total workload of less than 1.00. In addition, two employees at NWS Training Center (NWSTC) work half-time schedules, and count as 1 Full-Time Equivalent (FTE). Finally, Table 4 depicts the complete set of all PDSs and their development status.

The NWS Headquarters Reorganization was implemented in FY 2001. Under the reorganization, the HOTG will report directly to the Training Division within the new Office of Climate, Water, and Weather Services (OCWWS), creating a single line of authority within the organization. Also, the Operational Support Facility's (OSF) Operations Training Branch (OTB) is renamed the Warning Decision Training Branch (WDTB).

II. PDS Process - Definitions and Terms

NSTEP defines a PDS as "a set of integrated instructional components and presentations which describe the skills, knowledge, and abilities necessary to fulfill a major job responsibility." Each PDS is made up of a series of Professional Competency Units (PCU) and Instructional Components (IC), which are defined as follows:

PCU: Taken together, PCUs make up the integrated set of related job skills and abilities required to fulfill a major job responsibility (i.e., PDS). Each PCU specifically defines the skills or abilities individual staff are expected to attain in a given area of job performance. Table 4 shows the number of PCUs for each PDS, along with their development status.

IC: ICs are the specific training modalities used to train the job skills outlined in a specific PCU (e.g., classroom, teletraining, Internet World Wide Web [WWW]). A number of different training modalities may be used to accomplish required training within each PDS and even within each PCU. While the NWS has increasingly stressed the utilization of distance-learning techniques where possible to avoid expensive travel costs and

keep needed staff in the local office, it is recognized some in-residence training is still necessary. Additional details on the PDS concept can be found at the "Meteorology Education and Training" (MetEd) home page on the Internet, which can be accessed at: http://meted.ucar.edu/index3.htm. Also, as part of the PDS development effort, a new NWS Training Internet home page (NWSTRN) is under development by the NWSTC. NWSTRN will be used as a cross-cutting reference source for all NWS PDS training activities. This page can be accessed at:

http://www.nwstc.noaa.gov/d.ntp/

NWSTRN contains links to all PDSs, along with associated PCUs and ICs. Links to training materials are also provided as appropriate. A facsimile of Table 4 is accessible via the "Master NWS PDS Page" hyperlink, with hyperlinks provided for each PCU box to access specific PDS definitions and available training.

NWSTRN is being designed so staff in any NWS position can easily identify the suite of basic job skills they are expected to master. In addition, a set of Baseline Proficiency Standards (BPS) are being evaluated for access via NWSTRN to clearly define the expected baseline level of skill for each job task. These BPSs will assist local management in determining where training deficiencies exist and, therefore, where supplemental training may be needed.

The full listing of PDSs is provided below:

(1) Aviation Weather Prediction
(2) Convective Warning Process
(3) Forecasting Severe Convection
(4) Quantitative Precipitation Forecasting
(5) Numerical Weather Prediction
(6) Integrated Sensor Training
(7) Forecaster Development Program
(8) Management, Supervision, and Leadership
(9) Hydrology
(10) Advanced Weather Interactive Processing System
(11) Engineering, Electronics, and Facilities
(12) Cooperative Observer/Hydrometeorological Technician Duties
(13) Marine Weather Services
(14) Fire Weather
(15) Climate Prediction
(16) Administrative

Listed for each PDS in Table 4 are the associated number of PCUs, along with their developmental status. A green box with an "F" indicates all initial training materials for the PCU have been developed and are available for use. These materials will require periodic updating to ensure consistency with new science

and technologies. A yellow box with a "U" indicates training development for the PCU is under development but not yet complete. A red box with an "N" denotes training development has not yet commenced for the PCU.

III. TRAINING PLANS FOR FY 2001

In this section, detailed training plans for FY 2001 are presented. Subsection (A) contains a description of labor and non-labor costs associated with the NWS Training Program. Per the PDS list provided at the end of Section II, subsections (B) through (P) in Section II cover training activities in the respective PDSs. Non-PDS training activities funded by the FRG are covered in subsection (Q). As stated earlier, all funded items are presented in the order shown on Table 2.

A. Labor and Non-Labor Costs

The first category appearing in Table 2 is entitled "Labor." Each line item in this category indicates labor costs for the three training facilities: NWSTC, WDTB and COMET, respectively.

Meanwhile, the "Non-Labor" category encompasses internal costs required at each training facility, including (but not limited to) facility costs, equipment, staff travel and training, and supplies and materials. The COMET grant for outreach supports the costs of 16 Cooperative and 10 Partners projects in FY 2001; the costs of university instructors and their travel; costs to support the COMET classroom; building and archiving case studies for use in the classroom; costs for creating COMET distance-learning modules; and maintaining the MetEd Internet site.

B. Aviation Forecasting PDSs

COMET’s "West-Coast Fog Forecasting" module will be available on the WWW for use in early FY 2001. In addition, the NWSTC will begin work on a Turbulence module in conjunction with the Aviation Weather Center in late FY 2001.

C. Convective PDSs

The Convective PDSs consist of two PDSs:

- Forecasting Severe Convection
- Convective Warning Process

Most of the work in FY 2001 will focus on the Convective Warning Process PDS.

The goal of the Convective PDSs is to elicit a better scientific

understanding of the elements involved in the convective warning process which will improve skills in decision making and ultimately lead to better service.

Many instructional components for these PDSs are either currently available or under development via CD-ROM or the Internet. The WDTB will develop distance-learning training on the following topics:

- Doppler Weather Surveillance Radar (WSR-88D) Open Radar Product Generator (ORPG) Delta Training (highlight new functionality and differences from the current RPG).

- Advanced Weather Interactive Processing System (AWIPS) Build 5.0 with System for Convection Analysis and Nowcasting (SCAN) 2.0 Delta Training (for radar/convective warning changes brought about by the new build).

- New radar precipitation estimation techniques.

Additionally, the WDTB will offer an AWIPS-based WSR-88D Distance-Learning Operations Course (DLOC) for those NWS meteorologists and hydrologists who have not taken either the original 4-week, in-residence WSR-88D Operations Course or the previous DLOC training offered by the WDTB. This course includes a 1-week Warning Decision Making (WDM) I workshop at COMET for those students who have completed the new DLOC course. The WDTB will offer four additional Advanced WDM workshops (formerly WDM II) on advanced radar techniques as a continuation of the series of AWIPS-based workshops begun back in FY 1999. The additional workshops will allow at least one person from each field office and line unit to attend this "train-the-trainer" workshop during FY 2001. The FRG has augmented available NEXRAD funding with Base funds to pay for the fourth class.

D. Quantitative Precipitation Forecasting (QPF) PDSs

The continued development of training and techniques to improve QPF is one of the top priorities identified by the NWS Strategic Plan. The goal of the QPF PDSs is to address improvement of precipitation estimation and forecasts which will contribute to improved watch and warning accuracy.

The FRG determined the highest priority PCU for development in FY 2001 to be "Evaluate Numerical Weather Prediction (NWP) and Value-Added Guidance for Precipitation Forecasting" and has decided to fund the following three activities in association with this PDS:

- Offer a new course at COMET entitled "RFC/HPC

Hydromet." This course, to be attended by Hydrometeorological Analysis and Support (HAS) Forecasters from River Forecast Centers (RFCs) and NCEP's Hydrometeorological Prediction Center (HPC) QPF staff, will focus on changes required to implement the new QPF process.

- Offer two additional in-residence "Heavy Precipitation and Flash Flood" symposia at COMET for Science and Operations Officers (SOOs). The symposia will focus on the Weather Forecast Office's (WFO) responsibility for heavy rainfall and flash flooding.

- Continue to create Internet-based material based on the above course/symposia to facilitate on-station training for all staff.

E. NWP PDSs

Providing NWS forecast staff with a working knowledge of NWP models is important because the overall skill of the NWS forecast program beyond the 12-hour forecast projection is driven primarily by the operational models and the skill of the forecasters to correctly interpret and use the models. At the same time, numerical models are constantly undergoing upgrades and enhancements.

A COMET post-doctoral position and a Visiting Scientist are assigned to NCEP's Environmental Modeling Center to accomplish development work for the NWP PDS. These positions support NCEP's involvement with and development of NWP training materials. They also assist the meteorologists and instructional designers at COMET with developing NWP distance learning materials. Highlighted topics for development in FY 2001 will focus on PCU 4 from the NWP PDS entitled "Using Numerical Guidance in the Forecast Process".

F. Integrated Sensor Training (IST) PDSs

The IST PDSs address the need to make available to field users easily accessible, short training modules on the characteristics of new and derived data sets and on how to utilize these data sets on AWIPS.

Within the IST PDS PCUs, the topics which the FRG has ranked as highest priority for development in FY 2001 are:

- Using AWIPS integrated displays

- Using AWIPS in the Forecast Process: Integrated Cases

- Using Satellite Data and Products

- Using Radar Observations

- Using Lightning Observations

Funds are provided to pay salaries/benefits for Cooperative Institute (CI) employees at the Cooperative Institute for Research in the Atmosphere (CIRA), and the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), to develop distance-learning materials associated with the IST PDSs, and to develop and provide teletraining sessions via VISITView software to NWS staff. This software provides animation capabilities which are not available on AWIPS, such as full-resolution image fading and linked animation, and features live instructor voice via telephone lines. The FRG approved VISITView as the replacement NWS teletraining software to replace the previous OPTEL teletraining system.

The WDTB will develop and deliver distance learning modules on AWIPS Boundary Cases, Boundary Influence on Convective Morphology, and Topographic Effects on Convective Initiation. The National Environmental Satellite, Data, and Information Service (NESDIS) also plans to continue to provide $200,000 in FY 2001 to fund a 6-month effort at COMET to develop Polar Orbiting Environmental Satellite training for Internet access by NWS forecasters.

G. Forecaster Development Program PDSs

A series of meetings were held in FY 2000 to revise the Forecaster Development Program (FDP). The FDP provides a training plan for new Meteorologist Interns (referred to as interns hereafter) to prepare them for a career as a meteorologist. The FDP contains three phases:

- Operational Basics - Ensures interns have the skills needed to perform the duties of an Hydrometeorological Technician (HMT) position.

- Forecast Familiarization - Provides interns with a set of forecast-related training material to be completed while working standard HMT rotation. Allows interns to gain a common base of knowledge on operational topics.

- Professional Development - Encourages continuing education for meteorologists and helps to decide the career path based on the interns' interests.

It is expected the FDP will be implemented during FY 2001.

H. Management, Supervision, & Leadership PDSs

To address the training needs in these areas, a PDS meeting was held at NWS Headquarters in January 2000. As a result of this meeting, four new PDSs were defined:

- Office Management and Administration
- Leadership
- Human Resource Management
- Customer/Partner Service Management

In order to fulfill training requirements associated with the above PDS topics, the FRG proposes to establish and develop two new courses. An "Introduction to Supervision" course will be offered at NWSTC for Meteorologists in Charge (MICs); Hydrologists in Charge (HICs); and NCEP, Regional, and National Headquarters supervisory personnel to fulfill the NOAA 80-hour requirement for management and supervision training. Also, NWSTC will develop and offer a new course entitled "WFO/RFC Operations Management" for the first-line management team at field offices, which includes SOOs, Development and Operations Hydrologists (DOHs), Electronic Systems Analysts (ESAs), Data Acquisition Program Managers (DAPMs), Warning Coordination Meteorologists (WCMs), Lead Forecasters, Senior Hydrologic Forecasters, and Senior HAS Forecasters. This course will provide basic management concepts for those persons who act as office manager when the MIC/HIC is out of the office.

In addition, the NWS will participate in the Army’s "Personnel Management for Executives I" (PME I) course held at NWSTC. Per decision by the NWS Corporate Board, the FRG will fund travel and tuition costs for 65 NWS attendees in FY 2001, with the Senior Leadership Potential Program (SLPP) funding 10 additional NWS students. The NWS will reimburse the Army for the costs in holding an additional PME I class. The NWS will also send 15 attendees to the follow-up leadership course entitled "Personnel Management for Executives II" (PME II). The Army is contributing the PME II slots to the NWS for use of the facility, so only travel/per diem costs of NWS attendees must be funded.

The FRG has provided funding to continue contract on-site team training for 20 sites. Funding is also provided for an attrition "WCM course," which trains new WCMs in their job duties and responsibilities.

I. Hydrology PDSs

At three meetings during Spring 2000, seven PDSs were identified for the NWS Hydrologic Services Program as follows:

- Managing the Hydrology Program
- Hydrologic Forecasting
- Procedure Development and Model Calibration
- Forecasting Flash-Flood Events
- Assessing Near-Term Hydrologic Guidance and Issuing Public Forecasts
- Extended-Range Hydrologic Forecasting
- Assimilating Hydrometeorological Data

The highest priority activities for FY 2001 were determined from these PDSs. Among these is offering a new "WFO Hydrology Program Management" course at NWSTC. This course will provide training to all Service Hydrologists (SH) and hydrologic focal points on basic concepts specific to management of office hydrology programs.

Also, WFO Hydrologic Forecasting System (WHFS)-related classroom training will continue to be provided at NWSTC. This training is designed for the SH, hydrologic focal point, and one other WFO attendee, and will be upgraded for AWIPS Build 5.0. Funding is allocated for student and administrative travel to the "WHFS Workshop," for updating the course manual for Build 5.0 implementation, and for the part-time University Corporation for Atmospheric Research (UCAR) Visiting Scientists who serve as course instructors.

A Western Region-sponsored "Cold Region Hydrology" symposium will be offered in FY 2001. The main topic of this workshop will be to assess the current effects of river ice on river stages and forecast products. Additionally, funding will be provided to support travel to workshops provided by subject matter experts in the Office of Hydrologic Development. The topics of these workshops will include:

- National Weather Service River Forecasting System (NWSRFS) Calibration.
- Snow Modeling.
- Flood Wave Modeling.
- Threshold Runoff.

- RFC-Wide (Improved Stage III Precipitation Processing).

- NWSRFS Operational Forecast System.

- Ensemble Streamflow Prediction Analysis and Display Program.

- Model Calibration and Hydrologic Procedure Development.

There are additional training development efforts for hydrology approved by the FRG for FY 2001. Most of this training will take the form of Internet-based modules developed with contractor help. Topics for development include Operational Modeling of Snow Accumulation, Channel Hydraulics, and Hydrologic Routing.

As in past years, the FRG has approved funding for WFO and RFC staff to take hydrology and hydrometeorology correspondence courses at local universities.

J. AWIPS PDSs

The training requirements in this area emanate from the three AWIPS PDSs: "Operating AWIPS," "AWIPS System Administration and Maintenance," and "Implementing Local Applications on AWIPS." After examining the exact nature of the training needs through the individual PCUs, the FRG determined some of these needs could be addressed via new courses at NWSTC. Brief descriptions of these new courses follows.

"AWIPS Operations Support" is a course for SOOs, DOHs and AWIPS Focal Points designed to ensure all sites have a trained focal point available to provide operational support to AWIPS and ensure its proper use.

The purpose of the "AWIPS Applications" course is to optimize local developers' ability to design and utilize AWIPS local applications, including important software and Local Data Acquisition and Dissemination (LDAD) utilization training.

The "HP-UX Systems Administration" course is an updated version of a course last taught in FY 1999 focusing on AWIPS System Administration. It is to be attended by SOOs, DOHs, AWIPS focal points, and ESAs.

The objective of the "Intermediate UNIX for ETs" course is to provide Electronics Technicians (ETs) with an appropriate level of UNIX training to prepare them for all ensuing systems maintenance courses.

Three new courses related to the AWIPS Interactive Forecast Processing System (IFPS) will begin in FY 2001. The "IFPS

Managers" course for MICs and Regional IFPS Program Managers will prepare managers for the important cultural shift associated with IFPS implementation. The "IFPS Focal Point" course for SOOs and IFPS focal points will train these staff on utilizing IFPS and associated digital/probabilistic data bases to produce routine products. Finally, "IFPS Delta" training will be provided for those SOOs and IFPS focal points in offices using existing Interactive Computer Worded Forecasting (ICWF) software. The timing of these classes will depend upon the date of AWIPS Build 5.0 implementation.

The FRG has agreed to provide assistance to NWSTC in developing these courses through Field Development Teams. These teams, made up of selected field representatives, are needed in order to ensure these courses will be ready for offering as soon as possible in FY 2001. In order to meet unfinished training requirements in FY 2000, the FRG also recognized the requirement to fund an attrition "AWIPS Systems Manager" course for ESAs. This course is intended to provide ESAs (or RFC equivalents) with an understanding of AWIPS hardware, communications, software components, and dataflow.

Finally, the FRG has recommended funding to facilitate local provision of contractor-provided Information Technology (IT) systems training related to AWIPS. These funds, described in Section K, will also be used to procure contract training for various local systems administration training needs.

K. Engineering, Electronics, and Facilities PDSs

There are 11 PDSs identified in this area:

- Facilities Maintenance
- Facilities Management
- Environmental Compliance
- Safety and Health
- NEXRAD Maintenance
- ASOS (PACE) Maintenance
- NWR Maintenance
- Upper Air (Profiler) Maintenance
- Other Data Acquisition Systems Maintenance

- IT Systems and Network Support
- General Engineering Skills

As indicated by these PDSs, critical training needs focus on systems personnel being able to understand, utilize, and properly integrate the many new and derived data sets now available; transition the work force from hands-on to systems support; and take responsibility for ensuring adequate and economical facility maintenance to meet operational requirements.

Much of the training will be accomplished via classes offered by the NWSTC. Training will include the continuation of courses on new and legacy systems. These courses include "Automated Surface Observing System (ASOS) Maintenance," "Introduction to NWS Systems," "ART Rawinsonde Maintenance," "Hydrogen Generator Maintenance," "NOAA Weather Radio SRS Transmitter Maintenance "WSR-88D Maintenance," "WSR-88D MLOS Maintenance," "WSR-88D Dual Thread Adjunct Maintenance," "CRS Maintenance," and "Fall Protection and Rescue." Descriptions of the above classes can be accessed via the NWSTC Home Page at http://www.nwstc.noaa.gov.

The FRG has approved two new courses for FY 2001. The "WSR-88D Open RPG Maintenance" course will train WSR-88D ETs in maintaining the new Open RPG system. (Note: Funding for this course will be transferred from the NWS Office of Operational Systems at a level to be determined during FY 2001. Thus, a placeholder funding level is indicated in Table 2 but is not currently included in the "Total Budget.") Finally, the "CRS Network Operations" course for Console Replacement System (CRS) Operations focal points will teach the skills needed to maintain and manage the CRS Program and its associated equipment.

In addition, funding has been identified for local facilities maintenance and IT systems training to ensure field staff know how to repair vital mechanical and electrical systems; are aware of good maintenance practices; and possess a clear knowledge of how to comply with building, electrical, mechanical, environmental, and safety codes and regulations. These funds will be transferred to the Regions for implementation.

L. Cooperative Observer/HMT PDSs

Three PDSs have been identified in this area:

- Cooperative Program Management
- Surface Observing Program
- Upper Air Program

Training in FY 2001 will focus on the Cooperative Program Management PDS. The NWSTC attrition course entitled "Cooperative Network Operations" provides training for those managing the Cooperative Observing Program. The course includes details on program requirements, purposes, and objectives with topics including observer recruitment, equipment installation and maintenance, and network data quality control.

M. Marine Weather Services PDSs

To define national marine training requirements, a marine PDS meeting was held in January 2000. To address some of the identified training needs, the FRG will fund three regional marine workshops. These workshops will center around topics in Western Region, Eastern Region, and the Great Lakes. The FRG will define curricula for these workshops, and engage local academic experts to complete training based on requirements specified by this new PDS.

N. Fire Weather PDSs

A fire weather PDS meeting was held in April 2000. As a result of the meeting, the Fire Weather and Incident Meteorologist (IMET) PDSs were established.

The majority of training requirements for both the Fire Weather and IMET PDSs are already available, and must be amalgamated for access on NWSTRN by the PDS Producers. However, the OCWWS Meteorological Services Division will continue funding a workshop in FY 2001 for IMETs from non-training Base funds, and this is not reflected on Table 2.

O. Climate Prediction PDSs

The need for climate training for NWS field forecasters has become increasingly apparent during the last couple of years due to the highly publicized drought, El Niño, and La Niña events. While forecasters at NCEP’s Climate Prediction Center (CPC) are responsible for diagnosing and predicting short-term climate fluctuations, field forecasters need to be able to accurately assess the impact of the large-scale climate fluctuations on local weather. Adequate climate prediction training will also ensure NWS can fulfill its responsibilities to assist agencies both inside and outside the Federal Government in coping with such climate-related problems as food supply, energy allocation, water resources (both locally and nationally), and responding to local questions from the media and public.

A climate PDS meeting was held in April 2000 from which a wide array of training requirements were outlined. These include:

- A knowledge of the infrastructure for climate data and services
- Climate variability
- CPC products and services
- Public outreach

Most of this training will be accomplished via distance learning and public outreach materials during FY 2001, some of which is already available.

P. Administrative PDSs

Training for Administrative Support Assistants (ASAs) has historically been conducted by the NWS Regions individually. To bring training requirements for these job functions into the NSTEP process, an ASA PDS meeting was held in May 2000.

The majority of training materials for the ASA PDSs are already available, and must be amalgamated for access on NWSTRN by the PDS Producers. However, the FRG has allocated funds for Regions to conduct formal ASA training during FY 2001. This training will include travel/per diem costs to attend residence courses and commercially available training.

Q. Other Non-PDS Training Activities

Teletraining Communications: This supports routine commercial bridging costs for provision of teletraining sessions by the three NWS training facilities and other providers, such as NESDIS, Regional headquarters offices, and local offices.

SOO, DOH, and WCM Support: This supports each SOO, DOH and WCM by providing $2,000 to each WFO, RFC, and NCEP Service Center for local training needs. The funds are transferred directly to the Regions and NCEP for distribution to their respective field offices.

Regional Collaborative Projects: This supports NWS/university collaborative projects, workshops, and associated computer and travel for collaborative research. The funds are transferred directly to the Regions and NCEP for distribution to their respective field offices.

Professional Development Workstations (PDWs) and Science Applications Computers (SAC) Maintenance: This supports routine PDW and SAC maintenance costs.

Training Coordination: This supports participant travel to training and NSTEP Team meetings as needed during the year.

Unidata Case Studies: This supports a project with the UCAR's Unidata corporation to work with NWS and COMET and place 8 to 12 new hydrometeorological case studies used in the COMET classroom on their web server for access by the NWS and university communities. These case studies will be in AWIPS format and will be used for local AWIPS playback capabilities.

COMET NWS Subject Matter Expert (SME) Travel: This supports SME travel in association with COMET classes and distance-learning module development.

American Meteorological Society (AMS) Journals: This supports purchasing the AMS journals "Monthly Weather Review," "Weather and Forecasting," and "Journal of Hydrometeorology" for all field offices via Internet access only, and Regions via hard copy and Internet access. The NWS Chief Financial Officer's (CFO) office also contributes a share of these costs.

Hurricane Liaison Training - This will fund travel to the Tropical Prediction Center (TPC) for 12 selected WCMs to work with the multi-agency Hurricane Liaison team which briefs the Federal Emergency Management Agency (FEMA) and representatives of all Federal agencies responsible for response and recovery.

Training Administration and Facilitation - This will fund needed contracts, staff training, travel, transportation, supplies, and equipment within the OCWWS Training Division.

Distance-Learning Evaluation - This will fund contract and software costs needed for a study of current NWS distance-learning techniques. The goal of this study is to test the newest distance-learning software and techniques, and recommend solutions and enhancements for the future.

IV. PRIORITIZED UNFUNDED TRAINING REQUIREMENTS FOR FY 2001

The following list contains the highest priority unfunded training requirements for FY 2001, as determined by the FRG. While these are the priorities the FRG believed would be most important at the time this Plan was assembled, the FRG will reconvene to verify these priorities if and when additional funding becomes available.

The potential items for the unfunded list were drawn from three general classes:

1) One NWSTC "AWIPS Applications" class, which was cut in

FY 2000 due to FY 2000 AWIPS funding shortfalls.

2) Other items which were identified for funding via AWIPS in the initial draft of IP01 but were later cut when expectations of FY 2001 AWIPS funding levels were lowered.

3) Items which rated high in the FY 2001 prioritization process but did not rate high enough to make the final list.

The amounts shown in association with each item below would fully satisfy the specified requirements. The NWS Corporate Board will consider these funding requirements along with other NWS requirements. The FRG recommends they be funded in the order presented below:

(1) AWIPS Applications Class Canceled in FY 2000 ($16K): There was one "AWIPS Applications" class canceled at NWSTC in FY 2000. This class is needed to ensure completion of this course by all NWS staff who perform AWIPS local applications development. Without this class, 16 students will need to wait until FY 2002 to receive this training.

(2) NWSTC AWIPS Courses ($192K): In the initial stages of the FY 2001 process, the FRG identified the need for three courses at NWSTC to provide important AWIPS-related materials. These items are especially important given commissioning of all AWIPS nationwide during FY 2000:

- A "Network Security Workshop" ($150K) is needed to provide SOOs, DOHs, AWIPS focal points, and ESAs with important information on issues and concerns associated with network security and the safeguarding of data sets within the AWIPS system. Without this workshop, 150 staff will have to wait until FY 2002 to receive this training.

- One unfunded "HP-UX Systems Administration" class ($13.2K) will mean 12 students will have to wait until FY 2002 to receive this training.

- One unfunded "AWIPS Operations Support" class ($28.8K) will mean 16 students will have to wait until FY 2002 to take this new training class.

(3) Training and Visualization Workstations ($450K): The Training and Visualization Workstation is designed to replace SACs at all field sites. These workstations would be specified as high-end PCs using the LINUX Operating System, and are needed for experimenting with local numerical models and other remote

sensing data to accomplish on-station training. Another important function of this platform would be to locally play back AWIPS data for training purposes. Central Region procured this system already, so funds for 100 systems at $4500 each are required. (The FRG may decide to partially fund this or any other item in favor of other items to follow on this list.)

(4) WFO/RFC Operations Management/Introduction to Supervision Classes ($166K): Three "WFO/RFC Operations Management" classes ($113K) are needed to provide basic management concepts to all who have the occasion to act as office manager. Delaying these classes means 72 students will not receive this training until FY 2002.

Two "Introduction to Supervision" classes ($53K) are needed to ensure all first-line supervisors receive the NOAA-required 80 hours of training in this area.

Although four classes have been funded, 40 staff will need to wait until FY 2002 to receive training.

(5) Marine Workshops ($60K): A series of five workshops were initially proposed to be held in FY 2001 to address critical Marine Forecasting training needs. The FRG recognized the benefits of all five workshops but cut the number to three as a contribution toward meeting budget targets. This will result in a slower rate of implementation for marine forecasting technology.

(6) Training Administrative Software Support ($150K): The FRG had agreed on the need for this software to provide the training program a means to formally track employee training and performance. Elimination of this funding in FY 2001 will slow testing and eventual implementation of such software.

(7) CRS Network Operations Classes ($65K): The FRG originally identified the need for 18 of these classes (8 students per class) designed to train CRS focal points on maintaining and managing the CRS program but cut the number to 10 during the prioritization process. Thus, 64 students will have to wait until FY 2002 to receive this training.

TOTAL UNFUNDED REQUEST: $1,099K

V. TRAINING NEEDS IN FY 2002 AND BEYOND

In FY 2002 and beyond, the FRG expects the training program to continue to be driven by advances in AWIPS, and by needs with respect to new remote-sensing technologies, evolution of the NWS product and service suite, new digital data bases, numerical models, and staff professional development in areas of

leadership, supervision, Equal Employment Opportunity (EEO)/Diversity, and team building. In addition, training requirements will be gathered directly from all PDS Executive Producers to ensure all future training needs are considered.

The following specific training expectations were derived from the goals of Section 4.4 of the NWS Vision 2005 Strategic Plan, and the Roadmap for Education and Training:

- The NWP PDS is due to be completed in FY 2002:
  - Development of the "Using Numerical Guidance in the Forecast Process" PCU will begin during FY 2001 and conclude in early FY 2002.
  - Development of the "Assessing the Model Initialization in the Forecast Process" PCU will take place during FY 2002.

- To address a major paradigm shift towards digital data-base and probabilistic forecasting while meeting public warning improvement performance measures, funds for a 2-week residence course at the NWSTC for all meteorologists are requested for FY 2002. Also, as the use of IFPS becomes standard, staff training on Internet dissemination is requested.

- In order to improve product verification and performance measures, training will be required in severe weather, fire weather, hydrologic forecasting, and aviation weather.

- To address some of the topics outlined in the Climate Prediction PDS, a 1-week symposium is proposed for development by COMET in FY 2002.

- As new systems and technologies evolve, NWS ETs will require training on these new systems and technologies, including new ground receiving systems, signal processing systems, and new upper air balloon launch shelters.

- As the NWS cooperative observing network and upper air network continues to change, DAPMs will require training on these programs to ensure effective integration of data from these systems into NWS products and services.

- As mentioned in Section IV, funds are needed to purchase new training and visualization LINUX PCs for all offices for AWIPS case study playback.

- As plans for leadership training continue to evolve,

funds will be needed to develop and offer updated courses in the areas of management and supervision, team leadership, team member training, customer service, diversity, and implementing change. Extensive utilization of the Army's PME courses for first-line supervisors will continue.

- The NWS Corporate Board is discussing the future duties for NWS HMTs. After the Corporate Board reaches a decision, the NSTEP Team will identify and respond to training needs associated with this decision.

TABLE 1 - Residence Training Requirements: FY 2001

	Students/ Class	Days	Funding	ER	SR	CR	WR	AR	PR	NCEP	Non-FRG	Total Slots	Total Classes	Travel Cost/Class	Total Travel	Total Con-tract Cost	Total Cost
NWSTC																	
ASOS Maintenance	8	13	ASOS	8	10	15	8	4	1	0	2	48	6	$20,000	$120,000	$0	$120,000
Intro to NWS Systems	10	3	OSO Base	6	4	10	8	4	1	0	7	40	4	$10,000	$40,000	$0	$40,000
Art Rawinsonde System Maintenance	8	11	OSO Base	6	8	5	8	4	1	0	0	32	4	$18,400	$73,600	$0	$73,600
Hydrogen Generator Maintenance	8	4	OSO Base	0	0	0	0	4	0	0	4	8	1	$8,800	$8,800	$0	$8,800
NWR SRS Transmitter Maintenance	4	3	OSO Base	3	0	5	8	3	1	0	4	24	6	$4,000	$24,000	$0	$24,000
Fall Protection and Rescue	16	3	OSO Base	14	20	20	20	0	0	2	4	80	5	$17,600	$88,000	$50,000	$138,000
WSR-88D Maintenance	8	27	NEXRAD	6	6	8	9	0	1	0	2	32	4	$42,400	$169,600	$0	$169,600
WSR-88D MLOS Maintenance	8	3	NEXRAD	0	0	0	3	0	0	0	5	8	1	$8,000	$8,000	$0	$8,000
WSR-88D Dual-Thread Adjunct Maintenance	8	3	NEXRAD	0	0	0	3	0	0	0	5	8	1	$8,000	$8,000	$0	$8,000
WSR-88D Open RPG Maintenance (new)	10	6	NEXRAD	34	27	34	10	0	2	0	13	120	12	$14,000	$168,000	$10,000	$178,000
AWIPS Systems Manager	16	12	AWIPS	3	4	4	3	1	1	1	0	17	1	$38,400	$38,400	$0	$38,400
AWIPS Operations Support	16	8	AWIPS	16	14	30	18	5	2	5	6	96	5	$28,800	$144,000	$0	$144,000
AWIPS Applications	16	3.5	AWIPS	21	27	30	22	3	2	6	1	112	7	$16,000	$112,000	$0	$112,000
HP-UX Systems Administration	12	8	AWIPS	26	15	10	10	2	2	2	5	72	5	$21,600	$66,000	$0	$66,000
Intermediate UNIX for ETs	12	8	OM Base	7	7	11	5	3	1	0	2	36	3	$21,600	$64,800	$0	$64,800
CRS Maintenance	8	6	OM Base	21	15	34	14	3	2	0	7	96	12	$11,200	$134,400	$0	$134,400
Leadership Course (PMEI)	13	8	OM Base	14	17	3	14	2	2	6	7	65	5	$23,400	$117,000	$30,000	$147,000
Advanced Leadership Course (PMEII)	15	4	OM Base	0	0	15	0	0	0	0	0	15	1	$16,500	$16,500	$0	$16,500
Intro to Supervision	20	8	OM Base	15	7	23	15	8	2	4	6	80	4	$36,000	$144,000	$7,100	$151,100
WFO/RFC Operations Management	24	4	OM Base	6	17	9	6	3	2	3	2	48	2	$26,400	$52,800	$6,350	$59,150
WCM	16	8	OM Base	3	5	3	4	0	1	0	0	16	1	$28,800	$28,800	$9,900	$38,700
Coop Network Ops.	16	8	OM Base	10	11	9	10	3	1	0	4	48	3	$28,800	$86,400	$1,350	$87,750
CRS Network Operations	8	3	OM Base	14	19	23	15	3	1	0	5	80	10	$8,000	$80,000	$1,250	$81,250
WFO Hydrology Program Management	16	8	OM Base	10	16	17	13	2	1	0	5	64	4	$28,800	$115,200	$69,000	$184,200
WHFS Workshop & Build 5.0 Manual Update	8	3.5	AWIPS	5	6	4	4	4	1	0	1	25	3	$8,000	$24,000	$73,000	$97,000
IFPS Managers	16	2	AWIPS	0	31	39	8	3	2	2	11	96	6	$14,400	$86,400	$3,000	$89,400
IFPS Focal Point	16	8.5	AWIPS	12	62	78	8	6	4	2	4	176	11	$28,800	$316,800	$3,000	$319,800
IFPS Delta	16	3.5	AWIPS	25	6	5	3	0	0	0	9	48	3	$16,000	$48,000	$1,500	$49,500
COMET																	
SOO Heavy Precip./Flash Flood Symposia	27	4.5	OM Base	10	10	15	13	2	1	1	2	54	2	$35,100	$70,200	$32,500	$102,700
RFC/HPC Hydromet (new)	18	6	OM Base	9	12	6	11	5	0	12	0	55	3	$28,800	$86,400	$44,600	$131,000
Warning Decision Training Branch Workshops																	
DLOC Workshop	27	3.5	NEXRAD	10	20	24	20	3	1	1	2	81	3	$35,100	$105,300	$42,000	$147,300
Advanced WDM Workshop (NEXRAD-funded)	27	3.5	NEXRAD	14	19	23	14	2	1	3	5	81	3	$35,100	$105,300	$42,000	$147,300
Advanced WDM Workshop (Base FRG-Funded)	27	3.5	OM Base	5	6	7	5	1	1	1	1	27	1	$35,100	$35,100	$14,000	$49,100

Summary	**Funding**
NWSTC - OM Base	$964,850
COMET - OM Base	$233,700
WDTB - OM Base	$49,100
TOTAL OM Base	**$1,247,650**
TOTAL NWSTC AWIPS	**$916,100**
TOTAL NWSTC Base (OSO)	**$284,400**
NWSTC NWSTC NEXRAD	$363,600
WDTG NEXRAD	$294,600
TOTAL NEXRAD	**$658,200**
TOTAL ASOS	**$120,000**
TOTAL RESIDENCE COSTS	**$3,226,350**

	Cost/Student	
	NWSTC	COMET/WDTB
2 days	$900	
3/3.5 days	$1,000	
4 days	$1,100	$1,300
6 days	$1,400	$1,600
8/8.5 days	$1,800	$2,000
11 days	$2,300	
12 days	$2,400	
13 days	$2,500	
14 days	$2,700	
25 days	$5,000	
27 days	$5,300	

TABLE 2 - FY 2001 NWS Training and Education Expenditures

	Base	NEXRAD	AWIPS	ASOS	Total
Labor					
NWSTC (30 FTEs)	$2,140,000	$166,600			$2,306,600
WDTB FTEs		$802,400			$802,400
WDTB-CIMMS (non-FTE)		$448,400			$448,400
OCCWS FTEs at COMET	$300,000				$300,000
COMET/UCAR Staff-Grant (non-FTE)	$1,049,000		$870,000		$1,919,000
Non-Labor/PCS Costs/Other					
NWSTC	$578,000	$162,000		$30,000	$770,000
WDTB		$157,000			$157,000
COMET Grant-Non-Labor	$147,000				$147,000
Aviation	**Staff development time only**				
Convective					
DLOC Workshop		$147,300			$147,300
Advanced WDM Workshop	$49,100	$147,300			$196,400
QPF					
RFC/HPC Hydromet (COMET)	$131,000				$131,000
SOO Heavy Precip/Flsh Fld Symp (COMET)	$102,700				$102,700
DL Team at COMET	$448,000				$448,000
Numerical Weather Prediction					
NCEP Model Training Salaries	$200,000				$200,000
Integrated Sensor Training					
Int. Sensor CI Salaries	$371,000				$371,000
Forecaster Development Program	**Staff development time only**				
Management, Supervision, & Leadership					
Management and Supervision	$151,100				$151,100
WFO/RFC Operations Management	$59,200				$59,200
Leadership Course (PMEI)	$147,000				$147,000
Advanced Leadership Course (PMEII)	$16,500				$16,500
On-site Team Training	$82,000				$82,000
WCM Course	$38,700				$38,700
Hydrology					
WFO Hydrology Program Management	$184,200				$184,200
WHFS Workshop & Build 5.0 Manual Update			$97,000		$97,000
Cold Region Hydrology Symposium	$40,000				$40,000
Hydrology Workshops	$82,000				$82,000
New Hydro WWW Modules	$94,000				$94,000
Hydro Univ. Corr. Courses	$56,000				$56,000
AWIPS					
AWIPS Operations Support			$144,000		$144,000
AWIPS Applications			$112,000		$112,000
HP-UX Systems Administration			$66,000		$66,000
Intermediate UNIX for ETs	$64,800				$64,800
IFPS Managers			$89,400		$89,400
IFPS Focal Point			$319,800		$319,800
IFPS Delta			$49,500		$49,500
AWIPS Systems Manager			$38,400		$38,400
Engineering, Electronics, and Facilities					
ASOS Maintenance				$120,000	$120,000
Intro to NWS Systems	$40,000				$40,000
ART Rawinsonde System Maintenance	$73,600				$73,600
Hydrogen Generator Maintenance	$8,800				$8,800
NWR SRS Transmitter Maintenance	$24,000				$24,000
WSR-88D Maintenance		$169,600			$169,600
WSR-88D MLOS Maintenance		$8,000			$8,000
WSR-88D NWS Dual-Thread Adjunct Maintenance		$8,000			$8,000
CRS Maintenance	$134,400				$134,400
Fall Protection and Rescue	$138,000				$138,000
WSR-88D Open RPG Maintenance		$178,000			$178,000
CRS Network Operations	$81,250				$81,250
Local Faciltities Training	$125,000				$125,000
Local IT Systems Training	$415,000				$415,000
Coop Observer/HMT Duties					
Coop Network Ops. Course	$87,750				$87,750
Marine Weather Services					
Regional Marine Workshops	$90,000				$90,000
Fire Weather	**Staff development time only**				
Climate	**Staff development time only**				
Administrative Support					
ASA Training	$100,000				$100,000
Other Non-PDS Program Funds					
Teletraining Comms	$75,000				$75,000
SOO, DOH, and WCM Support	$280,000				$280,000
Regional Collaborative Projects	$120,000				$120,000
PDW & SAC Maintenance	$30,000				$30,000
Training Coordination	$40,000				$40,000
Unidata Case Studies	$105,000				$105,000
COMET NWS SME Travel	$50,300				$50,300
AMS Journals	$100,000				$100,000
Hurricane Liaison Training	$12,000				$12,000
Training Admininstration & Facilitation	$35,000				$35,000
Distance Learning Evaluation	$250,000				$250,000
TOTAL BUDGET (FTE Labor Excluded)	$6,506,400	$1,247,600	$1,786,100	$150,000	$9,690,100
GRAND TOTAL (Including FTE Labor):	**$8,946,400**	**$2,394,600**	**$1,786,100**	**$150,000**	**$13,277,100**

TABLE 3A: FY 01 COMET STAFF PDS MATRIX

STAFF:	Administration	AWIPS	Integrated Sensor Training	Convective Warning Process	NWP	QPF	Hydrology	Engineering, Electronics, and Facilities	Leadership, Management & Team Training	DoD Topics	Misc. PDS	Total
Abshire						0.80					0.20	1.00
Alberta		0.20	0.40			0.30					0.10	1.00
Brown			0.40			0.40				0.10	0.10	1.00
Bua					1.00							1.00
Byrd			0.30		0.10	0.40				0.10	0.10	1.00
Deyo			0.15		0.40	0.15				0.30		1.00
Dills		0.20	0.30							0.50		1.00
Drake			0.30			0.40				0.10	0.20	1.00
Ickler											0.50	0.50
Fuell		1.00										1.00
Fyffe	0.70										0.30	1.00
Godsil			0.15		0.25	0.10				0.30	0.20	1.00
Hanzel	0.50		0.10		0.10	0.10				0.10	0.10	1.00
Jascourt					1.00							1.00
Jesuroga	0.60	0.10									0.30	1.00
Johnson										0.60		0.60
Kelsch			0.10			0.80					0.10	1.00
Kiessling			0.10		0.10	0.20				0.20		0.60
Lamos	0.40		0.10		0.15	0.10				0.15	0.10	1.00
Lessard	0.75											0.75
Levesque			0.15		0.30	0.15				0.30	0.10	1.00
Mauriello	0.75											0.75
O'Reilley			0.10		0.10	0.10				0.10	0.10	0.50
Parrish			0.20		0.40	0.20				0.20		1.00
Piper	1.00											1.00
Sharma											0.50	0.50
Slagel	0.50											0.50
Smith			0.15		0.30	0.15				0.30	0.10	1.00
Spangler	0.70											0.70
Wang			0.50			0.40					0.10	1.00
Ward			0.20		0.20	0.20				0.20	0.20	1.00
Weingroff					0.80						0.20	1.00
Wesley										0.70	0.30	1.00
Whitehurst			0.15		0.25	0.25				0.20	0.15	1.00
Total	5.90	1.50	3.85		5.45	5.20				4.45	4.05	30.40
NWS Employees:												
Cianflone					0.90						0.10	1.00
Page											1.00	1.00
Mostek			1.00									1.00
Rozumalski											1.00	1.00
Total			1.00		0.90						2.10	4.00

TABLE 3B: FY 01 WDTB STAFF PDS MATRIX

STAFF:	Administration	AWIPS	Integrated Sensor Training	Convective Warning Process	NWP	QPF	Hydrology	Engineering, Electronics, and Facilities	Leadership, Management & Team Training	Aviation Forecasting	Misc. PDS	Total
Branch Chief	0.70			0.20							0.10	1.00
Greene	1.00											1.00
Baalke			0.70	0.05		0.15					0.10	1.00
Boettcher	0.10		0.65			0.15					0.10	1.00
Ferree			0.70	0.20							0.10	1.00
Grant			0.70	0.20							0.10	1.00
LaDue			0.70	0.20							0.10	1.00
Quoetone			0.65	0.20							0.15	1.00
Rinderknecht			0.75	0.10		0.05					0.10	1.00
Total	1.80		4.85	1.15		0.35					0.85	9.00
CIMMS Employees:												
Hoggard	0.80		0.20									1.00
Magsig	0.20		0.35	0.35							0.10	1.00
Tan	0.10		0.40	0.50								1.00
Wood	0.10		0.50	0.30							0.10	1.00
Xuechao	0.10		0.50	0.40								1.00
Total	1.30		1.95	1.55							0.20	5.00

TABLE 3C: FY 01 NWSTC STAFF PDS MATRIX

STAFF:	lministrati	AWIPS	ted Sensor T	Convective Warning Process	NWP	QPF	Hydrolog y	Engineering, Electronics, and Facilities	Leadership, Management & Team Training	Aviation Forecasti ng	Misc. PDS	Total
Beckman		1.00										1.00
Bode	1.00											1.00
Byerly	0.10							0.90				1.00
Byrnes		0.80								0.20		1.00
Clark							0.10		0.90			1.00
Estes								0.20	0.80			1.00
Griffin		0.40						0.50			0.10	1.00
Hamilton		0.90						0.10				1.00
Harding								0.90			0.10	1.00
Haskins								1.00				1.00
Hatch								0.80			0.20	1.00
Kaplafka								1.00				1.00
Lewis,D	1.00											1.00
Lewis, J	0.10							0.90				1.00
McGough		0.30					0.70					1.00
McNulty	0.70	0.10							0.10		0.10	1.00
Miller	0.10							0.90				1.00
Nedved	0.80							0.20				1.00
Polston		0.45						0.45			0.10	1.00
Quillen	0.20							0.80				1.00
Reed	0.50											0.50
Retzlaff	0.10							0.90				1.00
Richards	0.20							0.70			0.10	1.00
Rowell	0.20							0.70			0.10	1.00
Ryman	0.30							0.70				1.00
Schupbach	0.10							0.90				1.00
Teer	0.10							0.90				1.00
Vandeloo	0.50											0.50
Vogel	0.80						0.10				0.10	1.00
Wilbur	0.30							0.70				1.00
Wyatt							0.10	0.45	0.45			1.00
Total	7.10	3.95					1.00	14.60	2.25	0.20	0.90	30.00

Table 4: NWS PDS status

Professional Development Series (PDS)	Professional Competency Units (PCUs)											
	1	2	3	4	5	6	7	8	9	10	11	12
Aviation PDSs												
* Forecasting Aviation Icing (Wesley)	N	N	N	N	U	U	N	N	N			
* Forecasting Turbulence (NWSTC / HMD)	N	N	N	N								
* Impact on Aviation Weather on Customers (Dulong / Jackson)	U	U	U	U								
* CWSU On-Station Systems / Ops. (Branch or Amis)	N	N	N	N	N	N						
* Issuing Effective CWSU Products (NWSTC / HMD)	N	N	N	N								
* Forecasting Low-Altitude Clouds and Fog for Aviation Operations (Wesley)	U	N	U	U								
Convective PDSs												
* Forecasting Severe Convection (Ferree)	F	U	N	F	U							
* Convective Warning Process (Ferree)	N	F	F	U	F	U						
Quantitative Precipitation Forecasts (Graziano)	N	N	N	N	N	N	N					
Numerical Weather Prediction (Edman)	U	U	N	N								
Integrated Sensor Training (Mostek)	U	U	N	N	F	U	U	U	U			
Forecaster Development Program (FDP) PDSs												
* FDP Phase 1 - Operational Basics (McNulty)	F	F	F	F								
* FDP Phase 2 - Forecast Familiarization (Griffin)	F	F										
* FDP Phase 3 - Professional Development (McNulty)	F	U	F	F								
Management / Leadership / Supervision PDSs												
* Office Management and Administration (McNulty)	N	N	N	N								
* Leadership (Clark)	F											
* Human Resource Management (McNulty)	N	N	N									
* Customer / Partner Service Management (NWSTC)	N	N										
Hydrology PDSs												
* Managing the Hydrology Program (Dietrich / Vogel)	U	U	U	U	U	U	U	U	U			
* Hydrologic Forecasting (Helble)	U	U	U	U	U	N	N	N	U	N	N	
* Forecasting Flash Flood Events (TBD)	N	N	N	N	N	N						
* Procedure Development & Model Calibration (TBD)	N	U	U	U	U	U	U	N	N	U	N	N
* Assessing Near-Term Hydrologic Guidance & Issuing Public Forecasts (TBD)	N	N	N	N	N							
* Extended-Range Hydrologic Forecasting (TBD)	N	N	N	N	N	N	N					
* Assimilating Hydrometeorological Data (TBD)	N	N	N	N	N							

F = Finished
U = Under Development
N = Not Started

Table 4 continued: NWS PDS status

	Professional Competency Units (PCUs)											
Professional Development Series (PDS)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
AWIPS PDSs												
* Implementing Local Applications on AWIPS (Rowell)	F	F	F	F	F							
* AWIPS System Administration and Maintenance (Schupbach)	F	F	F	F	F	F	F	F	F	F	F	F
* Operating AWIPS (McNulty)	N	U	U	U	N	U	U					
Engineering PDSs												
* Facilities Maintenance (Duxbury / Grahl)	U	U	U	U								
* Facilities Management (Beeman)	U	U	U	U	U							
* Environmental Compliance (M. Jacob)	F	F	F									
* WSR-88D Maintenance (Richards / Ballard / Wissman)	U	U	U	U	U	U	N	N	N	N	N	N
* NWR Maintenance (Haskins)	F	F	F	F	F	F	F	F	F	F	F	F
* Upper Air (Profiler) Maintenance (Zichy)	F	F	F	U	U	U	U	U	U			
* Data Acquisition / Dissemination Sys. Maint. (Ryman)	U	U	U	U	U	U	U	U				
* IT Systems and Network Support (Murray / Walker)	U	U	U	U	U	U	N	N	N	N	N	
* General Engineering Skills (All EPMs)	F	F	F	F	F							
* Safety and Health (M. Jacob)	U	U	U	U								
* ASOS (PACE) Maintenance (Retzuff / Haskins)	N	N	N	N	N	N	N	N				
DAPM / HMT PDSs												
* Coop Program Management (McNulty / Wyatt)	N	N	N	N	N	N	N					
* Surface Observing Program (Dombrowsky)	N	N	N	N	N	N	N					
* Upper Air Program (Dombrowsky)	N	N	N	N	N							
Marine Weather Services (Ainsworth)	N	N	N	U	U	U	N	N	N			
Fire Weather PDSs												
* Fire Weather (Ochoa)	F	F	U	U								
* Incident Meteorologist (IMET) (Ochoa)	F											
Climate Services (Livezey / NWSTC)	U	N	U	U	U							
Administrative (ASA) (Dickenson)	U	U	U	U	U	U	U	U				

F = Finished
U = Under Development
N = Not Started